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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,187	03/30/2004	Katsuyuki Taguchi	250115US2XBIR	3368
22850	7590	02/15/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			KAO, CHIH CHENG G	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 02/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/812,187

Applicant(s)

TAGUCHI, KATSUYUKI

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

See page 1 in paragraph 1, “<http://www3.toshiba.co.jp/medical/4d-ct/>”.

2. The specification is objected to because of the following informality, which appears to be a minor draft error including drawing inconsistencies.

In the following format (location of objection; suggestion for correction), the following correction may obviate the objection: (page 6, paragraph 22, “Figure 6 illustrates”; replacing “Figure 6 illustrates” with - -Figures 6a through 6c illustrate- -).

Appropriate correction is required.

### *Claim Objections*

3. Claims 1-3, 6-8, 11-13, 16-18, and 21-24 are objected to because of the following informalities, which appear to be minor draft errors including grammatical and/or lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following correction(s) may obviate the objection(s): (claim 1, line 5, “in-which”; deleting the hyphen), (claim 1, line 7, “the periphery”; replacing “the” with - -a- -), (claim 2, line 2, “the distance”;

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replacing “the” with - -a- -), (claim 3, line 2, “the distance”; replacing “the” with - -a- -), (claim 6, line 12, “the periphery”; replacing “the” with - -a- -), (claim 7, line 3, “the distance”; replacing “the” with - -a- -), (claim 8, line 2, “the distance”; replacing “the” with - -a- -), (claim 11, line 11, “the periphery”; replacing “the” with - -a- -), (claim 12, line 3, “the distance”; replacing “the” with - -a- -), (claim 13, line 2, “the distance”; replacing “the” with - -a- -), (claim 13, line 3, “raysum”; inserting a hyphen between “ray” and “sum”), (claim 16, line 8, “the periphery”; replacing “the” with - -a- -), (claim 17, lines 2-3, “the distance”; replacing “the” with - -a- -), (claim 18, line 2, “the distance”; replacing “the” with - -a- -), (claim 21, line 2, “the sharpness”; replacing “the” with - -a- -), (claim 21, lines 2-3, “the detector cell”; replacing “the” with - -a- -), (claim 22, line 2, “the sharpness”; replacing “the” with - -a- -), (claim 22, line 3, “the detector cell”; replacing “the” with - -a- -), (claim 22, at the end of line 3; inserting a period), (claim 23, line 2, “the sharpness”; replacing “the” with - -a- -), (claim 23, line 3, “the detector cell”; replacing “the” with - -a- -), (claim 23, at the end of line 3; inserting a period), (claim 24, line 2, “the sharpness”; replacing “the” with - -a- -), (claim 24, line 3, “the detector cell”; replacing “the” with - -a- -), and (claim 24, at the end of line 3; inserting a period).

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6-9, 11-14, and 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Hsieh (US Patent 6295331).

5. Regarding claim 1, Hsieh discloses a method comprising: obtaining projection data (col. 2, lines 57-59) from at least two detector rows in a CT system (col. 3, line 67), z-filtering the projection data in a direction of the at least two detector rows to obtain filtered data in which windmill artifacts would necessarily be reduced due to the z-filtering (col. 2, line 43, and col. 6, lines 9-14), said z-filtering including varying sharpness of filtering so that pixels near an iso-center have higher resolution than pixels in a periphery (col. 5, lines 60-66, and col. 6, lines 14-24 and 30-32), and reconstructing a CT image based on the filtered data (col. 10, lines 2-3).

6. Regarding claims 6 and 11, Hsieh discloses an apparatus (fig. 2) comprising a helical scanning device configured to collect projection data while at least one of a gantry and a couch moves along an axial direction of the couch (col. 2, line 43), the helical scanning device including, an X-ray source configured to generate X-rays (fig. 2, #14), and a detector having detector elements (fig. 2, #20) arranged in at least two detector rows (col. 3, line 67) along the axial direction and configured to produce the projection data (col. 2, lines 57-59), and a processor (fig. 2, #34) comprising a means for z-filtering the projection data in a direction of the at least two detector rows to obtain filtered data in which windmill artifacts would necessarily be reduced due to the z-filtering (col. 2, line 43, and col. 6, lines 9-14), said z-filtering including varying sharpness of filtering so that pixels near an iso-center have higher resolution than pixels

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in a periphery (col. 5, lines 60-66, and col. 6, lines 14-24 and 30-32), and a reconstructing device (fig. 2, #34) configured to reconstruct a CT image based on the z-filtered data (col. 10, lines 2-3).

7. Regarding claims 2, 7, and 12, Hsieh further discloses wherein the z-filtering is performed in relation to at least one of a ray angle and a distance from an iso-center to a detector cell (col. 5, lines 60-67).

8. Regarding claims 3, 8, and 13, Hsieh would necessarily have filtering performed in relation to a distance from an iso-center to a voxel on a ray-sum where the ray-sum coincides with an xy-plane (col. 6, lines 24-32), since the performed filtering has some sort of relationship with the isocenter, the ray-sum, and the xy-plane.

9. Regarding claims 4, 9, and 14, Hsieh further discloses the reconstructing including backprojecting (col. 4, line 57).

10. Regarding claims 21-23, Hsieh further discloses wherein the z-filtering comprises increasing a sharpness of a kernel with decreasing distance from the iso-center to a detector cell (col. 5, lines 60-67).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 16-19 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh ('331) in view of Hsieh (US Patent 6587537).

For purposes of being concise, Hsieh ('331) discloses steps as recited above.

However, Hsieh ('331) fails to disclose a computer program product storing instructions for execution on a computer system, which when executed by the computer system, causes the computer system to perform steps.

Hsieh ('537) teaches a computer program product storing instructions for execution on a computer system, which when executed by the computer system, causes the computer system to perform steps (col. 4, lines 1-12).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the steps of Hsieh ('331) with the computer program product of Hsieh ('537), since one would be motivated to make such a modification for easier storage and use (col. 4, lines 1-12) as implied from Hsieh ('537).

12. Claims 5, 10, 15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh ('331) and Hsieh ('537) as applied to claim 4, 9, 14, and 19 above, and further in view of Feldkamp et al. ("Practical cone-beam algorithm").

Hsieh ('331) as modified above suggests a method, apparatus, and program product as recited above.

However, Hsieh ('331) fails to disclose backprojecting including Feldkamp reconstruction.

Feldkamp et al. teaches backprojecting including Feldkamp reconstruction (title and abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method, apparatus, and program product of Hsieh ('331) as modified above with the backprojecting of Feldkamp et al., since one would be motivated to make such a modification for making smaller errors and more convenient computation (abstract) as shown by Feldkamp et al.

### ***Response to Arguments***

13. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period



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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

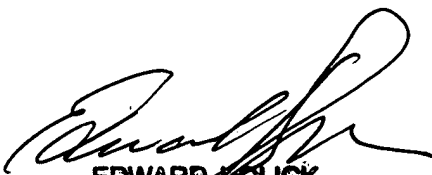
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gk



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